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THE ECOLOGY OF THE MANGROVES OF SOUTH FLORIDA: A COMMUNITY PROFILE

by

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Food habits and status of 24 species of turtles, snakes, lizards, and frogs of the Florida mangrove region are given in Appendix C. Any of three criteria had to be met before a species was included in this table: (1) a direct reference in the literature to mangrove use by the species, (2) reference to a species as being present at a particular geographical location within the mangrove zone of Florida, and (3) North American species recorded from mangroves in the West Indies or South America, but not from Florida. This last criterion assumes that a species which can utilize mangroves outside of Florida will be able to use them in Florida. Ten turtles are listed of which four (striped mud turtle, chicken turtle, Florida red-bellied turtle, and softshell turtle) are typical of freshwater. Two (mud turtle and the ornate diamondback terrapin) are found in brackish water and the remainder (hawksbill, green, loggerhead, and Atlantic ridley) are found in marine waters.

Freshwater species usually occur in the headwater regions of mangrove-lined river systems. All four freshwater species are found in habitats other than mangrove swamps including streams, ponds, and freshwater marshes. The brackish water species are found in salt marshes in addition to mangrove swamps. Mangroves, however, are the principal habitat for the ornate diamondback terrapin (Ernst and Barbour 1972). Carr and Goin (1955) listed two subspecies of the diamondback: Malaclemys terrapin macrospilota and M. t. rhizophorarum. Malaclemys terrapin macrospilota inhabits the southwest and southern coasts, and M. t. rhizophorarum is found in the Florida Keys. The two subspecies intergrade in the region of northern Florida Bay.

All four of the marine turtles are associated with mangrove vegetation at some stage of their lives. Loggerhead and green turtles are apparently much less dependent on mangroves than the remaining two, although we strongly suspect that recently hatched loggerheads may use mangrove estuaries as nursery areas. Green turtles are generally believed to feed on a variety of submerged aquatic plants and sea grasses; recent evidence has shown that they also feed on mangrove roots and leaves (Ernst and Barbour 1972). The Atlantic ridley's preferred habitat is "shallow coastal waters, especially the mangrove-bordered bays of the southern half of the peninsula of Florida" (Carr and Goin 1955). Hawksbill turtles feed on a variety of plant materials including mangrove (especially red mangrove), fruits, leaves, wood, and bark (Ernst and Barbour 1972).

Three species in the genus Anolis have been reported from Florida mangroves: the green anole, the cuban brown anole, and the Bahaman bank anole. All are arboreal lizards that feed on insects. The green anole is widespread throughout the Southeastern United States and is not at all dependent on mangrove swamps. The other two species have much more restricted distributions in the United States and are found only in south Florida. They also are not restricted to mangrove ecosystems. Of the six species of snakes listed, the mangrove water snake (Figure 13) is most dependent upon mangrove habitats.

Two important species of reptiles found in mangrove swamps are the American alligator and the American crocodile. The alligator is widespread throughout the Southeastern United States and is only incidentally found in low salinity sections of Florida mangrove areas (Kushlan 1980). The American crocodile is rare; historically its distribution was centered in the mangrove-dominated areas of the upper and lower Florida Keys (particularly Key Largo) and the mangrove-lined shorelines and mud flats along the northern edge of Florida and Whitewater Bays (Kushlan 1980). Mangroves appear to be critical habitat for this species. Its range has shrunk considerably in south Florida since the 1930's, even though Florida Bay was added to Everglades National Park in 1950 (Moore 1953; Ogden 1978). Much of the decrease in range is due to increased human activity in the Florida Keys. The remaining population centers of the American crocodile are in

Figure 13. The mangrove water snake, Nerodia fasciata compressicauda, curled on a red mangrove prop root. Photograph by David Scott.

northern Florida Bay and adjacent coastal swamps and the northern end of Key Largo (Ogden 1978; Kushlan 1980). The species uses a variety of habitats for nesting in the Florida Bay region including open hardwood thickets along creek banks, hardwood-shrub thickets at the heads of sand-shell beaches, and thickets of black mangroves behind marl banks (Ogden 1978). On Key Largo the crocodile locates its nests on creek and canal banks in red and black mangrove swamps (Ogden 1978). Mangrove areas thus appear to be important in the breeding biology of this endangered species.

Interestingly, only three species of amphibians, to our knowledge, have been recorded in Florida mangrove swamps (Appendix C). This is due to two factors: (1) lack of detailed surveys in low salinity swamps and (2) the inability of most amphibians to osmoregulate in salt water. No doubt, several additional species occur in the freshwater-dominated hammock and basin mangrove communities inland from the coast. Possible additional species include: the eastern narrow-mouthed toad, Gastrophryne carolinensis, the eastern spadefoot toad, Scaphiopus holbrooki, the cricket frog, Acris gryllus, the green tree frog, Hyla cinerea, and the southern leopard frog, Rana utricularia.